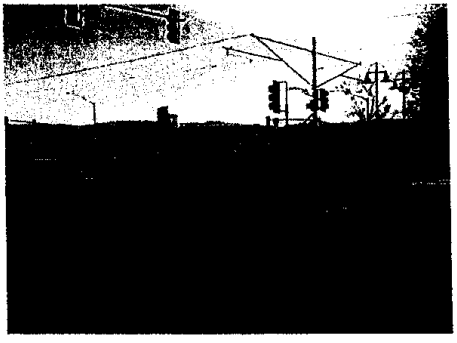
8

RSTP – 2005 Cycle - Grant Proposal

Milpitas Citywide Traffic Signal Retiming Project




Project Partners: City of Milpitas and
Caltrans – District 4 – Signal Operations Division

Grant Due Date: Thursday, 12/30/2004, 4:00 PM

Project Sponsor: Jaime O. Rodriguez
City of Milpitas – Traffic Engineering
455 E. Calaveras Blvd
Milpitas, CA 95035
(408) 586-3335
jrodriguez@ci.milpitas.ca.gov

Grant Proposal Due Date: Thursday, 12/30/2004, 4:00 P.M.

I. GENERAL INFORMATION

a) Project Title:

Milpitas - Citywide Traffic Signal Retiming

This is a proactive project by the project partners to retiming approximately 41 existing traffic signals. All traffic signals are located in the City of Milpitas, but are operated & maintained by either Caltrans or the City of Milpitas.

b) Project Sponsor and Contact Information:

City of Milpitas, California

Jaime O. Rodriguez
City of Milpitas – Traffic Engineering
455 E. Calaveras Blvd
Milpitas, CA 95035
(408) 586-3335, O
(408) 586-3305, F
jrodriguez@ci.milpitas.ca.gov

c) Other Participating Agencies & Their Roles:

Caltrans District 4, Signal Operations Division

Caltrans owns, operates & maintains one of the corridors identified in this grant proposal as a corridor in need of traffic signal retiming, Calaveras Blvd, State Route 237. Caltrans will participate in the review & implementation of the seven (7) traffic signal retiming plans for that corridor.

d) Responsibilities and Requirements:

All participating agencies that own, operate, or maintain traffic signals within the project limits will be required to:

- Indemnify MTC per the requirements listed in Section 2.6 of the Program Guidelines;
- Provide staff time to review the timing plans developed by the assigned consultant OR if peer review is granted, indemnify the peer reviewer;
- Review deliverables in a timely fashion to facilitate project completion by mid-November 2005, unless otherwise approved by MTC;
- Provide permission to the assigned consultant to enter data into relevant portions of the Traffic Signals Database.

Do all participating agencies agree to the above requirements?
__X__ Yes _____ No

Exceptions: *If no, provide explanation. Also, list agencies requesting peer review and basis for request.*

e) **Work Type(s):** *Check all that apply.*

__X__ Weekday Peak Period Time-of-Day Traffic Signal Coordination:
__X__ Weekday AM __X__ Weekday Midday __X__ Weekday PM

Notes: *(1) Checking all three scenarios will not adversely affect the applicant's chances of receiving funding. (2) Check the weekday midday box if unsure about whether signal coordination would be warranted, but would like the consultant to conduct the analysis.*

_____ Weekday Transit Signal Priority
_____ Traffic Signal Coordination for Additional Scenarios
(must be paid for by local agency)
_____ Wkday Off-Peak _____ Weekend _____ Special Event
_____ Incident _____ Traffic Responsive _____ Other: *Specify*

__X__ Check here if it is the applicant's intent to apply for Traffic Engineering Technical Assistance Program (TETAP) funds for any of the additional scenarios.

The City of Milpitas plans to submit a grant proposal for the 2005 cycle of TETAP funding to prepare a studies for the McCarthy Bl (Ranch Dr to Bellew Dr) and the Dixon Landing Rd (Milmont Dr to McCarthy Bl) corridors. The grant proposal will include a request to provide technical services to recommend signal operations and geometric improvements.

f) **Project Type:** *Check one.*

_____ One Arterial in One Jurisdiction
_____ One Arterial in Many Jurisdictions
_____ Multiple Arterials in One Jurisdiction
__X__ Multiple Arterials in Many Jurisdictions
_____ Area-Wide in One Jurisdiction
_____ City-Wide in One Jurisdiction
_____ City-Wide in Adjacent Jurisdictions

2) PROJECT INFORMATION

a) **Project Description:**

Description: This is a proactive project by the project partners to retiming approximately 41 existing traffic signals. All traffic signals are located in the City of Milpitas, but are operated & maintained by either Caltrans or the City of Milpitas.

b) **Available Data:** *Check all that apply.*

__X__ Timing Sheets
__X__ Coordination Plans
__X__ Traffic Signal As-Builts
__X__ Aerial Photos
_____ Signal Timing Preferences
_____ Transit Priority Preferences
_____ Computer Model
__X__ Three Years Collision Data

Additional Information: *N/A.*

c) **Are all the traffic signals that will be retimed as part of the project currently capable of coordination and if appropriate, transit signal priority?**

__X__ Yes _____ No

Additional Information: *N/A.*

d) **For any of the traffic signals that will be retimed as part of the project, has it been it been at least three (3) years since the last retiming effort?**

__X__ Yes _____ No

Additional Information: It has been over six (6) years since the proposed project corridors operated & maintained by the City of Milpitas were retimed. There is no record for the last retiming effort of the Calaveras Blvd (SR 237) corridor.

e) **Describe any and all known factors outside of the RSTP consultant's control that may require a schedule extension beyond project completion by mid-November 2005.**

Both the City of Milpitas and Caltrans have separate roadway improvement projects along Calaveras Bl at Abel St. The City of Milpitas is modifying the traffic signal at Abel St & Calaveras Bl to provide a dedicated northbound right-turn only lane as well to install traffic signal preemption equipment. Caltrans has a resurfacing project on Calaveras that is scheduled to begin in the Summer 2005.

f) **Potential to Enhance Safety:**

Referring to www.ots.ca.gov/cgi-bin/rankings.pl and Appendix C of the Program Guidelines, list for all participating cities or counties the 2002 ranking by population for total fatal and injury collisions.

Figure 2, includes a detail of the Office of Traffic Safety ranking for the City of Milpitas.

Agency	Ranking
City of Milpitas, California	24/92

g) **Potential to Improve Mobility and Potential to Increase Person Throughput:**

MTC will conduct an analysis using a geographic information system to determine 1) the extent of the project that will benefit major roadways, as defined by Caltrans' Functional Classification of Streets and Highways; and 2) the extent of the project that will benefit the 2001 Lifeline Transportation Network. *Each participating agency should review the list of signals within their jurisdiction that are included in MTC's Traffic Signals Database to ensure that all of the signals within the project limits have been geocoded. The list of signals is available at www.bayareatrafficsignals.org/current.htm under Traffic Signals Database.*

Are all signals within the project limits included in the Traffic Signals Database?

_____ Yes ___X___ No

Additional Information: The list of traffic signals within the City of Milpitas on the MTC database is provided in *Figure 3, MTC Traffic Signals Database List.*

One of the proposed signal locations, Abel St & Post Office, is a new traffic signal that is currently being designed as part of a City of Milpitas, Capital Improvement Program project. Staff is asking that this location be taken into consideration during the retiming of the Abel St corridor to determine if coordination is appropriate.

h) Potential to Enhance System Efficiency:

Need:

This grant application marks the first proactive measure by the City of Milpitas in over six (6) years to retime signals within our jurisdiction. The City of Milpitas is the crossroads for commuters in the South Bay with three major State Routes protruding through its boundaries, I-680, I-880, and SR 237. A majority of the project corridors in this grant proposal are adjacent to or along state routes.

This proactive project will help to move both residents, commuters and visitors through the City and ensure that operations is friendly to public transportation, pedestrians and bicyclists. This project will also prepare models that will be used by City staff to proactively time signals on an annual basis on its own. Calaveras Bl (SR237), is the most heavily used corridor in the City of Milpitas with an ADT of over 60,000 vehicles within the project limits.

A project map with locations is attached in *Figure 1, Project Map & Locations.*

Rationale for Project Definition:

The project consist of existing traffic signal systems that are operated & maintained by either the City of Milpitas or Caltrans. Staff has identified two additional signals and one future signal north of Great Mall Pk that should be considered for coordination with neighboring systems to improve operations.

Optimization of Actuated Settings:

Consultants will be available to review actuated settings for each study intersection to minimize delay during non-coordinated periods and enhance pedestrian and bicyclist safety. The analysis may include review of minimum and maximum green settings; yellow and red clearances; pedestrian timing; gap, extension, and reduction settings; phase sequence; feasibility of conditional service for protected left-turn movements; and skipping phases.

Are all participating agencies willing to have the assigned consultant provide some or all of the above services?

__X__ Yes _____ No

Additional Information: *N/A.*

Maintenance Program:

The City of Milpitas operates & maintains all of the project locations identified in Figure A with the exception of the seven (7) traffic signals along Calaveras Blvd, SR 237. Those signals are operated & maintained by Caltrans.

The City plans to use the models created through this project to implement an annual proactive traffic signal timing-monitoring program.

i) Potential to Improve Air Quality:

Select from the following the monitoring station closest to the project and enter into the table below. (Hint: Double-click on the table to edit.)

- For North Counties: Napa, San Rafael, Santa Rosa, Vallejo
- For Coast and Central Bay: Oakland, San Francisco, San Pablo
- For Eastern District: Bethel Island, Concord, Fairfield, Livermore, Pittsburg
- For South Central Bay: Fremont, Hayward, Redwood City, San Leandro
- For Santa Clara Valley: Los Gatos; San Jose, 4th Street; San Jose East; San Martin; Sunnyvale

Closest Monitoring Station: *San Jose - Central Bay*

Year	Days Exceeded 1-Hr Nat'l Std	Days Exceeded 1-Hr State Std	Days Exceeded 8-Hr Nat'l Std
2003	0	4	0
2002	0	0	0
2001	0	2	0
Total	**0**	**6**	**0**

Figures 5 – 6 include copies of the Bay Area Pollution Summaries for 2001 – 2003.

j) Potential to Increase Transit Use:

Description: Light Rail Transit (LRT) operations will be evaluated as part of the development of traffic signal timing for the Tasman Dr & Great Mall Pk corridors. LRT operations transition to dedicated, above-ground right-of-way after the Great Mall Pk & I-880 NB On/Off Ramps intersection. It is the intention of staff from the City of Milpitas to maintain full LRT priority as part of this proposed project.

For how many traffic signals will transit priority be provided or updated?

4 traffic signals or 10% of total number of traffic signals identified in this grant proposal.

3) PROJECT COST ESTIMATE

a) Basic Signal Coordination

Fill in the following table for the time-of-day signal coordination element of the project (no transit priority). Do not change the unit cost values. (Hint: Double-click on the table to edit.)

Project Phase	No. of Signals per Implementation Scenario		No. of Timing Plans (2 or 3)	Subtotal Cost
	From Remote Location	At Controller		
1	4		3	$6,600
2	6		3	$9,900
3	3		3	$4,950
4	2		3	$3,300
5	4		3	$6,600
6	3		3	$4,950
7	4		3	$6,600
8	4		3	$6,600
9	2		3	$3,300
10	2		3	$3,300
11		4	3	$7,200
12		3	3	$5,400
			Total Cost Estimate	**$68,700**

b) Additional Services

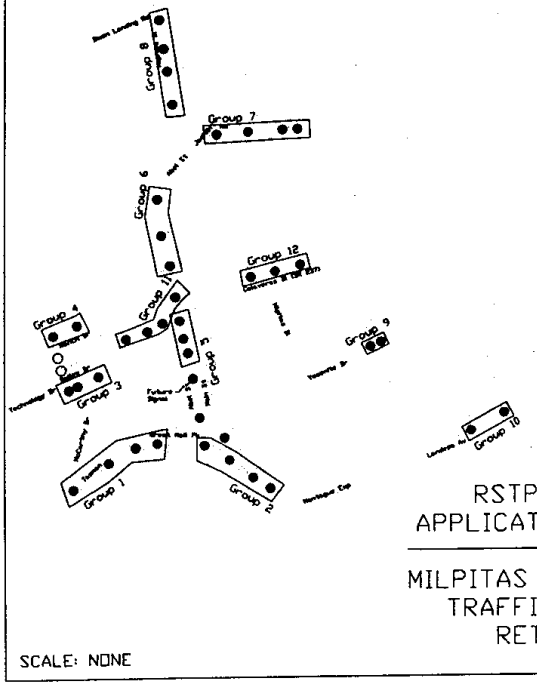
Staff from the City of Milpitas will be requesting that models prepared by the consultant to complete the project be provided to the City at the completion of the project. We will also be requesting training from the consultant to update the models created by the project. Training will be provided to no more than five (5) representatives from the City from both Traffic Engineering and Traffic Signal Maintenance.

DEMONSTRATION OF SUPPORT AND APPLICATION SIGNATURES

Attach letters of support from all participating agencies or have an official from the other participating agencies sign this application along with the project sponsor. By providing letters of support and/or signing the application, the signator affirms that the statements contained in the application package are true and complete to the best of their knowledge.

Signature	Signature
Jaime O. Rodriguez City of Milpitas	Lai Hong Chiu Caltrans, District 4

Figure 1: Project Map & Locations



RSTP GRANT APPLICATION - 2005

MILPITAS - CITYWIDE TRAFFIC SIGNAL RETIMING

SCALE: NONE

Group 1: Tasman Drive at
- McCarthy Blvd
- Alder Dr
- I-880 SB On/Off Ramps
- I-880 NB On/Off Ramps

Group 2: Great Mall Pkwy at
- Abel St
- Main St
- McCandless Dr
- Centre Point Dr
- *Abel St & Curtis Dr
- *Main St & Great Mall Dr

Group 3: Bellew Dr at
- McCarthy Bl
- Cypress Dr
- Barber Ln

Group 4: Ranch Dr at
- McCarthy Bl
- McCarthy Shopping Cntr

Group 5: Abel St (South) at
- Serra Wy
- Junipero Dr
- Corning Dr
- *FS at Post Office

Group 6: Abel St (North) at
- Redwood Av
- Marilynn Dr
- Weller Ln

Group 7: Jacklin Rd at
- Arizona Av
- Escuela Pkwy
- Hetch Hetchy Ped Crossing
- Hillview Dr

Group 8: Milpitas Bl at
- Dixon Landing Rd
- Sunny Hills Ct
- Washington Dr
- Midwick Dr

Group 9: Yosemite Dr at
- Sinclair Frontage Rd
- Dempsey Rd

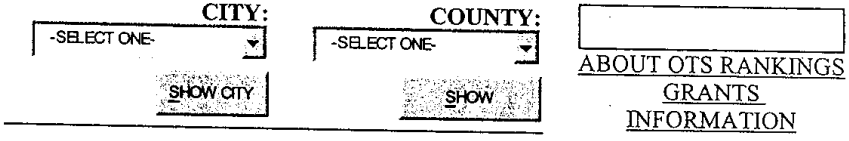
Group 10: Landess Av at
- Clear Lake Av
- Yellowstone Av

Group 11: Calaveras Bl (SR. 237) at
- I-880 NB Off-Ramp
- Abbot Av
- Serra Wy
- Abel St

Group 12: Calaveras Bl (SR. 237) at
- Milpitas Bl
- Town Center Shopping Cntr
- Hillview Dr

*Consider Coordination

Figure 2: OTS Safety Ranking



Agency	Year	County	Group	Population	DVMT
MILPITAS	2002	SANTA CLARA CO.	3 CV	64,350	510,002

FATAL AND INJURY COLLISION TYPE	TOTALS		RANKING BY VEHICLE MILES POPULATION GROUP	RANKING BY POPULATION POPULATION GROUP
Total Fatal and Injury	327		10/92	24/92
Alcohol Involved	13		68/92	77/92
Speed Related	113		7/92	11/92
Nighttime (9:00pm - 2:59am)	44		2/92	9/92
Hit and Run	32		10/92	15/92
HBD Driver < 21	0		89/92	91/92
HBD Driver 21-34	7		47/92	55/92
Composite			7/92	17/92
KILLED AND INJURED VICTIM TYPE				
Pedestrians	13		58/92	71/92
Pedestrians 65+	4		9/92	15/92
Pedestrians < 15	3		62/92	71/92
Bicyclists	13		59/92	75/92
Bicyclists < 15	1		87/92	88/92
DUI ARRESTS	173	0.45 %		36/90

Figure 3: MTC Traffic Signal Database – City of Milpitas, California
Project Locations shown in Bold.

Database ID	N/S Street	E/W Street	Primary City	Signal ID
085007001	Dixon Landing Rd.	Milmont Dr	Milpitas	1
085007002	**Milpitas Blvd**	**Dixon Landing Rd.**	**Milpitas**	**2**
085007003	**Milpitas Blvd**	**Washington**	**Milpitas**	**3**
085007004	**Milpitas Blvd**	**Midwick**	**Milpitas**	**4**
085007005	**Milpitas Blvd**	**Sunnyhills**	**Milpitas**	**5**
085007006	Milpitas Blvd	Abel/Jacklin	Milpitas	9
085007007	**Arizona**	**Jacklin Rd.**	**Milpitas**	**10**
085007008	**Escuela**	**Jacklin Rd.**	**Milpitas**	**11**
085007009	**Hillview**	**Jacklin Rd.**	**Milpitas**	**12**
085007010	**Hetch-Hetchy Ped**	**Jacklin Rd.**	**Milpitas**	**13**
085007011	**Abel St.**	**Redwood**	**Milpitas**	**17**
085007012	**Abel St.**	**Marylinn**	**Milpitas**	**18**
085007013	**Abel St.**	**Weller**	**Milpitas**	**19**
085007014	Main St.	Weller	Milpitas	20
085007015	**I-880 SB Ramps**	**Tasman Dr**	**Milpitas**	**23**
085007016	**I-880 NB Ramps**	**Great Mall Pkwy.**	**Milpitas**	**24**
085007017	**Abel St.**	**Junipero**	**Milpitas**	**32**
085007018	Main St.	Serra Way	Milpitas	33
085007019	**Abel St.**	**Serra Wy**	**Milpitas**	**34**
085007020	**Abel St.**	**Corning**	**Milpitas**	**35**
085007021	Abel St.	Capitol	Milpitas	36
085007022	**Abel St.**	**Curtis**	**Milpitas**	**37**
085007023	Main St.	Curtis	Milpitas	38
085007024	**Main St.**	**Great Mall Dr.**	**Milpitas**	**39**
085007025	**Sinclair**	**Yosemite**	**Milpitas**	**41**
085007026	**Dempsey**	**Yosemite**	**Milpitas**	**42**
085007027	S. Park Victoria	Yosemite	Milpitas	43
085007028	S. Park Victoria	Yellowstone	Milpitas	44
085007029	Yellowstone	Westridge	Milpitas	45
085007030	**Yellowstone**	**Landess**	**Milpitas**	**46**
085007031	**Clear Lake**	**Landess**	**Milpitas**	**47**
085007032	S. Park Victoria	Landess	Milpitas	48
085007033	**Centre Pointe**	**Great Mall Pkwy.**	**Milpitas**	**55**
085007034	**McCandless**	**Great Mall Pkwy.**	**Milpitas**	**56**
085007035	**Main St.**	**Great Mall Pkwy.**	**Milpitas**	**57**
085007036	Abel St	Great Mall Pkwy.	Milpitas	58
085007037	Abel St	Main St	Milpitas	59
085007038	Main St	Cedar	Milpitas	60
085007039	**Alder**	**Tasman Dr.**	**Milpitas**	**61**

Figure 3: MTC Traffic Signal Database – City of Milpitas, California (Continued)
Project Locations Shown in Bold.

Database ID	N/S Street	E/W Street	Primary City	Signal ID
085007040	**McCarthy**	**Tasman Dr.**	**Milpitas**	**62**
085007041	McCarthy	Adler	Milpitas	63
085007042	**McCarthy**	**Barber**	**Milpitas**	
085007043	McCarthy	Cottonwood	Milpitas	
085007044	McCarthy	Sycamore	Milpitas	
085007045	**McCarthy**	**Cypress**	**Milpitas**	
085007046	**McCarthy**	**Bellew**	**Milpitas**	
085007047	McCarthy	Ranch	Milpitas	
085007048	Park Victoria	Calaveras Blvd.	Milpitas	
085007049	Gadsden	Calaveras Blvd.	Milpitas	
085007050	Temple	Calaveras Blvd.	Milpitas	
085007051	Milpitas Blvd.	Escuela	Milpitas	
085007052	Milpitas Blvd.	Beresford	Milpitas	
085007053	Milpitas Blvd.	Las Coches	Milpitas	
085007054	Milpitas Blvd.	Turquoise	Milpitas	
085007055	Milpitas Blvd.	Yosemite	Milpitas	
085007056	Milpitas Blvd	Ames Av	Milpitas	
085007057	Milpitas Blvd	Gibraltar Dr	Milpitas	
085007058	Park Victoria	Edsel	Milpitas	
085007059	Park Victoria	Big Basin	Milpitas	
085007060	Park Victoria	Jacklin Rd.	Milpitas	
085007061	California Cr	Sun Ped Xing	Milpitas	
085007062	**Hillview**	**Calaveras Blvd**	**Milpitas**	
085007063	**Town Center Dr**	**Calaveras Blvd**	**Milpitas**	
085007064	**Milpitas Blvd**	**Calaveras Blvd**	**Milpitas**	
085007065	**Abel St**	**Calaveras Blvd**	**Milpitas**	
085007066	**Calaveras Blvd**	**Serra Wy**	**Milpitas**	
085007067	**Abbot Av**	**Calaveras Blvd**	**Milpitas**	
085007068	I-880 SB Ramps	Hwy 237	Milpitas	
085007069	McCarthy	237 EB Ramp	Milpitas	
085007070	I680 NB Ramps	Jacklin Road	Milpitas	
085007071	I680 SB Ramps	Jacklin Road	Milpitas	
085007072	I680 NB Ramps	Landess	Milpitas	
085007073	California Cr	I-880 NB Off-ramp	Milpitas	
085007074	California Cr	Dixon Landing Rd.	Milpitas	
085007075	I-880 NB Ramps	Dixon Landing Rd	Milpitas	
085014111	McCandless Dr	Montague Exwy	Milpitas	
085014113	Capitol Av	Montague Exwy	Milpitas	
085014114	Milpitas Blvd	Montague Exwy	Milpitas	

Figure 3: MTC Traffic Signal Database – City of Milpitas, California (Continued)
Project Locations Shown in Bold.

Database ID	N/S Street	E/W Street	Primary City	Signal ID
085014115	Pecten Ct	Montague Exwy	Milpitas	

Project Location not on MTC Database (Future Signal):

	Abel St	**Post Office Dr**

BAY AREA AIR POLLUTION SUMMARY — 2003

—See NOTES on back of this page

MONITORING STATIONS	OZONE							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}				$PM_{2.5}$				
	Max 1-Hr	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat/Cal Days	Max 24-Hr	Ann Avg	Nat/Cal Days	Ann Avg	Max 24-Hr	Nat Days	Cal Days	Max 24-Hr	Nat Days	3-Yr Avg	Ann Avg	3-Yr Avg
North Counties	(pphm)				(pphm)			(ppm)			(pphm)			(ppb)			($\mu g/m^3$)				($\mu g/m^3$)			($\mu g/m^3$)	
Napa	11	0	2	0.0	8	0	6.5	4.7	2.5	0	7	1.2	0	-	-	-	21.3	41	0	0	-	-	-	-	-
San Rafael	9	0	0	0.0	7	0	4.9	3.8	2.0	0	7	1.6	0	-	-	-	17.6	41	0	0	-	-	-	-	-
Santa Rosa	10	0	1	0.0	8	0	5.4	3.1	1.8	0	6	1.2	0	-	-	-	16.9	36	0	0	39	0	37.9	8.8	10.0
Vallejo	10	0	2	0.0	7	0	6.5	4.0	2.9	0	7	1.2	0	5	1.2	0	17.3	39	0	0	31	0	35.0	9.4	11.8
Coast & Central Bay																									
Oakland	8	0	0	0.0	5	0	4.0	3.9	2.8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0.9	0	-	-	-	-	-	-	-	-	-
San Francisco	9	0	0	0.0	6	0	4.8	3.6	2.8	0	7	1.8	0	7	2.2	0	22.7	52	0	1	42	0	47.3	10.1	11.6
San Pablo	9	0	0	0.0	7	0	5.3	3.1	1.8	0	7	1.3	0	5	1.5	0	20.6	49	0	0	-	-	-	-	-
Eastern District																									
Bethel Island	9	0	0	0.3	8	0	7.9	1.6	0.9	0	5	0.9	0	6	2.2	0	19.4	51	0	1	-	-	-	-	-
Concord	10	0	5	0.3	9	1	8.2	3.2	2.0	0	6	1.3	0	3	0.6	0	16.4	34	0	0	50	0	41.0	9.7	11.2
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	-	6	1.2	0	-	-	-	-	-	-	-	-	-
Fairfield	9	0	0	0.0	8	0	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	13	1	10	1.0	9	3	8.4	3.7	1.9	0	7	1.6	0	-	-	-	18.9	33	0	0	42	0	43.0	9.0	11.6
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	-	7	1.6	0	-	-	-	-	-	-	-	-	-
Pittsburg	9	0	0	0.0	8	0	7.5	3.4	1.7	0	6	1.2	0	8	2.1	0	21.1	59	0	1	-	-	-	-	-
South Central Bay																									
Fremont	12	0	4	0.0	9	1	6.5	3.2	1.9	0	8	1.7	0	-	-	-	18.2	37	0	0	34	0	37.4	8.7	11.1
Hayward	12	0	3	0.0	9	1	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	11	0	1	0.0	8	0	5.8	5.4	2.6	0	8	1.5	0	-	-	-	19.8	38	0	0	34	0	37.7	9.0	10.6
San Leandro	10	0	2	0.0	7	0	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara Valley																									
Gilroy	11	0	6	0.0	9	2	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Gatos	12	0	7	0.0	10	2	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Central*	12	0	4	*	8	0	*	5.5	4.0	0	9	2.1	0	-	-	-	23.6	60	0	3	56	0	*	11.7	*
San Jose East	10	0	2	0.0	7	0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, Tully Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.8	58	0	2	52	0	40.2	10.1	11.1
San Martin	11	0	9	0.0	9	4	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunnyvale	11	0	4	0.0	9	2	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bay Area Days over Standard		**1**	**19**			**7**				**0**			**0**			**0**			**0**	**6**		**0**			

*See notes of explanation on back of this page

2003 NOTES

The annual Bay Area Air Pollution Summary summarizes measurements for the national and California pollutant standards.

***Station Information (see asterisks on front page)**

The San Jose 4th Street station was closed for relocation on April 30, 2002. It reopened as San Jose Central on October 5, 2002. Three-year average ozone statistics and three-year average PM2.5 statistics for San Jose Central have been omitted from this summary.

Explanation of Terms

State and national excesses occur when pollutant concentrations surpass the indicated standards, with values in most cases rounded to the same number of decimal places.

MAX HR / MAX 8-HR / MAX 24-HR
The highest average contaminant concentration over a one-hour period, an eight-hour period (on any given day), or a 24-hour period (from midnight to midnight).

ANN AVG
The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

NAT DAYS
The number of days during the year for which the monitoring station recorded contaminant concentrations in excess of the national standard.

CAL DAYS
The number of days during the year for which the station recorded contaminant levels in excess of the California standard.

TOTAL BAY AREA DAYS OVER STANDARD is not a sum of excesses at individual stations, but rather a sum of the number of days for which excesses occurred at any one or more stations.

3-YR AVG (1-hr ozone standard)
The average number of days per year during which ozone levels were in excess of the national 1-hour standard, based on the most recent three-year period. *An average higher than 1.0 at any monitoring station means the region will be considered out of attainment by the EPA.*

3-YR AVG (8-hr ozone standard)
The 3-year average of the fourth highest 8-hour average ozone concentration for each monitoring station. *A 3-year average greater than 8.4 at any monitoring station means that the region will be considered out of attainment by the EPA.*

PM_{10}
Particulate matter ten microns or smaller in size. (PM_{10} is only sampled every sixth day. *Actual* days over standard can be estimated to be six times the number shown.)

$PM_{2.5}$
Particulate matter 2.5 microns or smaller in size. $PM_{2.5}$ is a sub-category of PM_{10}.

PM_{10} ANN AVG and MAX 24-HR
California PM_{10} Annual Average and Maximum 24-Hour concentrations are reported at local temperature and pressure conditions. National PM_{10} Annual Average and Maximum 24-Hour concentrations are reported at standard temperature and pressure conditions. This table shows the California readings for PM_{10} Ann Avg and Max 24-Hr, which are generally slightly higher than the national readings.

3-YR AVG ($PM_{2.5}$ 24-hour standard)
The 3-year average of the annual 98th percentiles of the individual 24-hour concentrations of $PM_{2.5}$. *A 3-year average greater than 65 $\mu g/m^3$ at any monitoring station means that the region will be considered out of attainment by the EPA.*

3-YR AVG ($PM_{2.5}$ annual standard)
The 3-year average of the quarterly averages of $PM_{2.5}$. *A 3-year average greater than 15 $\mu g/m^3$ at any monitoring station means that the region will be considered out of attainment by the EPA.*

HEALTH-BASED AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Std	National Std
Ozone	1 Hour	9 pphm	12 pphm
	8 Hour	—	8 pphm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 Hour	25 pphm	—
	Annual	—	5.3 pphm
Sulfur Dioxide	24 Hour	40 ppb	140 ppb
	Annual	—	30 ppb
Particulates < 10 microns	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual	20 $\mu g/m^3$	50 $\mu g/m^3$
Particulates < 2.5 microns	24 Hour	—	65 $\mu g/m^3$
	Annual	12 $\mu g/m^3$	15 $\mu g/m^3$

Concentrations | **ppm** parts per million | **pphm** parts per hundred million | **ppb** parts per billion | **$\mu g/m^3$** micrograms per cubic meter

TEN-YEAR BAY AREA AIR QUALITY SUMMARY

DAYS OVER STANDARDS

YEAR	OZONE			CARBON MONOXIDE				Nitrogen Dioxide	Sulfur Dioxide		PM_{10}		$PM_{2.5}$
	1-Hr		8-Hr	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*		24-Hr**
	Nat	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat
1994	2	13	-	0	0	0	0	0	0	0	0	9	-
1995	11	28	-	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	5	-
1999	3	20	9	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	6	7
2003	1	19	7	0	0	0	0	0	0	0	0	6	0

*PM_{10} is sampled every sixth day—*actual* days over standard can be estimated to be six times the numbers listed.

**2000 is the first full year for which the Air District measured $PM_{2.5}$ levels.

BAY AREA AIR POLLUTION SUMMARY — 2002

—See NOTES on back of this page

MONITORING STATIONS	OZONE							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}					$PM_{2.5}$				
	Max 1-Hr	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat/Cal Days	Max 24-Hr	Ann Avg	Nat/Cal Days	Ann Geo Mean	Ann Avg	Max 24-Hr	Nat Days	Cal Days	Max 24-Hr	Nat Days	3-Yr Avg	Ann Avg	3-Yr Avg
North Counties	(pphm)				(pphm)			(ppm)			(pphm)			(ppb)			($\mu g/m^3$)					($\mu g/m^3$)			($\mu g/m^3$)	
Napa	12	0	1	0.0	8	0	6.3	4.2	2.4	0	5	1.3	0	-	-	-	22.6	25.4	67	0	4	-	-	-	-	-
San Rafael	8	0	0	0.0	6	0	4.7	4.1	1.9	0	6	1.7	0	-	-	-	19.1	21.4	70	0	2	-	-	-	-	-
Santa Rosa	8	0	0	0.0	6	0	5.2	3.7	2.1	0	5	1.3	0	-	-	-	17.8	19.7	60	0	2	51	0	40.2	10.5	10.5
Vallejo	11	0	1	0.0	7	0	5.9	5.8	3.9	0	5	1.3	0	4	1.3	0	18.7	21.4	80	0	1	72	1	51.3	13.6	12.6
Coast & Central Bay																										
Oakland	5	0	0	0.0	4	0	4.0	4.4	3.3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1.0	0	-	-	-	-	-	-	-	-	-	-
San Francisco	5	0	0	0.0	5	0	4.4	3.5	2.6	0	8	1.9	0	6	1.9	0	21.0	24.7	74	0	2	70	4	48.0	13.1	11.9
San Pablo*	7	0	0	0.0	5	0	4.5	3.7	1.8	0	5	*	0	5	*	0	*	*	67	0	3	-	-	-	-	-
Eastern District																										
Bethel Island	11	0	5	0.3	10	3	7.9	1.7	1.3	0	4	1.0	0	9	2.5	0	20.8	23.8	58	0	3	-	-	-	-	-
Concord	10	0	5	0.7	9	3	7.8	3.5	2.3	0	6	1.5	0	6	0.8	0	17.9	20.9	63	0	3	77	4	44.7	13.3	11.4
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	-	12	1.8	0	-	-	-	-	-	-	-	-	-	-
Fairfield*	10	0	4	0.0	8	0	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	16	2	10	1.0	11	6	8.2	4.8	2.5	0	8	1.7	0	-	-	-	21.5	24.5	64	0	2	62	0	47.7	13.8	12.3
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	-	7	1.2	0	-	-	-	-	-	-	-	-	-	-
Pittsburg	11	0	4	0.0	10	2	7.4	6.2	2.5	0	5	1.3	0	14	2.5	0	21.1	23.7	73	0	3	-	-	-	-	-
South Central Bay																										
Fremont	11	0	3	0.0	7	0	6.1	3.7	2.2	0	6	1.9	0	-	-	-	20.0	22.5	52	0	1	48	0	41.6	12.5	11.4
Hayward	9	0	0	0.0	7	0	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	9	0	0	0.0	6	0	5.3	5.8	2.8	0	7	1.7	0	-	-	-	19.5	22.0	53	0	1	43	0	41.8	11.5	11.3
San Leandro	10	0	1	0.0	6	0	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara Valley																										
Gilroy*	12	0	6	*	9	2	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Gatos*	11	0	4	0.0	9	2	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Central*	*	*	*	*	*	*	*	5.3	4.5	0	8	*	0	-	-	-	*	*	70	0	2	58	0	*	*	*
San Jose East	9	0	0	0.0	7	0	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, Tully Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.9	25.4	70	0	2	54	0	45.9	12.0	11.8
San Martin	12	0	8	0.0	10	5	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunnyvale*	9	0	0	*	7	0	*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bay Area Days over Standard		**2**	**16**			**7**				**0**			**0**			**0**				**0**	**6**		**7**			

*See notes of explanation on back of this page

NOTES

The annual Bay Area Air Pollution Summary summarizes measurements for the federal and California time-averaged pollutant standards.

This is the first year the Air Pollution Summary is reporting $PM_{2.5}$ statistics.

***Station Information (see asterisks on front page)**

The **Fairfield** monitoring station was relocated on May 29, 2002.

The **Gilroy** station was closed for the year 2000, due to construction activity. All 3-year average statistics for Gilroy have been omitted from this summary.

The **Los Gatos** station was closed from October 10 to December 3, 2002, due to construction on site.

The **San Jose 4th Street** station was closed for relocation on April 30, 2002. It reopened as **San Jose Central** on October 5, 2002. Ozone statistics and annual nitrogen dioxide, PM10, and PM2.5 statistics for San Jose Central have been omitted from this summary.

The **San Pablo** station was closed for relocation on August 24, 2002, and reopened on September 13, 2002. Annual statistics for San Pablo have been omitted from this summary.

The **Sunnyvale** station opened in 2001. All 3-year average statistics for Sunnyvale have been omitted.

Explanation of Terms

State and federal excesses occur when pollutant concentrations surpass the indicated standards, with values in most cases rounded to the same number of decimal places.

MAX HR / MAX 8-HR / MAX 24-HR
The highest average contaminant concentration over a one-hour period, an eight-hour period (on any given day), or a 24-hour period (from midnight to midnight).

NAT DAYS
The number of days during the year for which the monitoring station recorded contaminant concentrations in excess of the national standard.

CAL DAYS
The number of days during the year for which the station recorded contaminant levels in excess of the California standard.

3-YR AVG (1-hr ozone standard)
The average number of days per year during which ozone levels were in excess of the national 1-hour standard, based on the most recent three-year period. *An average higher than 1.0 at any monitoring station means the region will be considered out of attainment by the EPA.*

3-YR AVG (8-hr ozone standard)
The 3-year average of the fourth highest 8-hour average ozone concentration for each monitoring station. *A 3-year average greater than 8.4 at any monitoring station means that the region will be considered out of attainment by the EPA.*

3-YR AVG ($PM_{2.5}$ 24-hour standard)
The 3-year average of the annual 98th percentiles of the individual 24-hour concentrations of $PM_{2.5}$. *A 3-year average greater than 65 $\mu g/m^3$ at any monitoring station means that the region will be considered out of attainment by the EPA.*

3-YR AVG ($PM_{2.5}$ annual standard)
The 3-year average of the quarterly averages of $PM_{2.5}$. *A 3-year average greater than 15 $\mu g/m^3$ at any monitoring station means that the region will be considered out of attainment by the EPA.*

ANN AVG
The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

ANN GEO MEAN
The annual geometric mean concentration level (used for PM_{10}). The geometric mean of *n* positive numbers is the *n*th root of their product.

PM_{10}
Particulate matter ten microns or smaller in size. (PM_{10} is only sampled every sixth day. *Actual* days over standard can be estimated to be six times the number shown.)

$PM_{2.5}$
Particulate matter 2.5 microns or smaller in size. $PM_{2.5}$ is a sub-category of PM 10.

TOTAL BAY AREA DAYS OVER STANDARD is not a sum of excesses at individual stations, but rather of the number of days for which excesses occurred at any one or more stations.

HEALTH-BASED AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Std	National Std
Ozone	1 Hour	9 pphm	12 pphm
	8 Hour	—	8 pphm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 Hour	25 pphm	—
	Annual	—	5.3 pphm
Sulfur Dioxide	24 Hour	40 ppb	140 ppb
	Annual	—	30 ppb
Particulates < 10 microns	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual	—	50 $\mu g/m^3$
	Annual Geometric Mean	30 $\mu g/m^3$	—
Particulates < 2.5 microns	24 Hour	—	65 $\mu g/m^3$
	Annual	—	15 $\mu g/m^3$

Concentrations | **ppm** parts per million | **pphm** parts per hundred million | **ppb** parts per billion | **$\mu g/m^3$** micrograms per cubic meter

TEN-YEAR BAY AREA AIR QUALITY SUMMARY

DAYS OVER STANDARD

YEAR	OZONE			CARBON MONOXIDE				Nitrogen Dioxide	Sulfur Dioxide		PM_{10}		$PM_{2.5}$
	1-Hr		8-Hr	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*		24-Hr**
	Nat	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat
1993	3	19	-	0	0	0	0	0	0	0	0	10	-
1994	2	13	-	0	0	0	0	0	0	0	0	9	-
1995	11	28	-	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	5	-
1999	3	20	9	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	6	7

*PM_{10} is sampled every sixth day—*actual* days over standard can be estimated to be six times the numbers listed.

**2000 is the first full year for which the Air District measured $PM_{2.5}$ levels.

BAY AREA AIR POLLUTION SUMMARY — 2001

—See notes of explanation on back of this page

MONITORING STATIONS	OZONE							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}				
	Max 1-Hr	Nat Days	Cal Days	3-Yr Avg	Max 8-Hr	Nat Days	3-Yr Avg	Max 1-Hr.	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat/Cal Days	Max 24-Hr	Ann Avg	Nat/Cal Days	Ann Geo Mean	Ann Avg	Max 24-Hr	Nat Days*	Cal Days*
North Counties	(pphm)				(pphm)			(ppm)			(pphm)			(ppb)			($\mu g/m^3$)				
Napa	10	0	1	0.0	8	0	6.6	5.7	3.0	0	6	1.3	0	-	-	-	21.4	24.0	91	0	2
San Rafael	9	0	0	0.0	7	0	5.1	5.2	2.4	0	6	1.7	0	-	-	-	18.1	20.4	79	0	2
Santa Rosa	9	0	0	0.0	6	0	5.6	4.8	2.4	0	6	1.3	0	-	-	-	18.4	21.1	74	0	2
Vallejo	9	0	0	0.0	7	0	6.2	5.6	4.1	0	6	1.3	0	4	1.0	0	16.5	19.4	86	0	3
Coast & Central Bay																					
Oakland	7	0	0	0.0	4	0	4.2	5.0	4.0	0	-	-	-	-	-	-	-	-	-	-	-
San Francisco	8	0	0	0.0	5	0	4.6	4.0	3.3	0	7	1.9	0	7	2.1	0	22.9	26.4	67	0	7
San Pablo	9	0	0	0.0	8	0	4.8	2.3	1.4	0	6	1.4	0	5	1.3	0	-	-	-	-	-
Eastern District																					
Bethel Island	13	1	3	0.7	10	2	8.2	2.5	1.5	0	4	1.0	0	7	2.1	0	18.7	22.7	87	0	3
Concord	13	1	6	1.3	9	1	8.1	4.4	2.7	0	7	1.5	0	4	1.1	0	17.8	20.4	106	0	2
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	-	16	1.7	0	-	-	-	-	-
Fairfield	10	0	3	0.3	8	0	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	11	0	9	1.3	9	2	8.3	5.8	3.2	0	7	1.7	0	-	-	-	21.1	24.6	109	0	3
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1.3	0	-	-	-	-	-
Pittsburg	12	0	2	0.0	9	1	7.3	5.2	2.4	0	6	1.4	0	11	2.7	0	16.6	20.6	98	-	-
South Central Bay																					
Fremont	11	0	3	0.3	8	0	6.2	5.4	2.7	0	8	1.9	0	-	-	-	20.8	23.4	58	0	3
Hayward	10	0	2	0.0	9	1	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	11	0	1	0.0	7	0	4.9	7.1	3.9	0	7	1.7	0	-	-	-	19.9	22.6	65	0	4
San Leandro	9	0	0	0.0	6	0	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara Valley																					
Gilroy	12	0	3	0.0	10	2	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Gatos	12	0	2	0.0	9	1	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, 4th Street	11	0	2	0.0	7	0	6.0	7.6	5.1	0	11	2.4	0	-	-	-	25.6	28.9	77	0	4
San Jose East	9	0	0	0.0	6	0	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, Tully Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.2	22.8	75	0	4
San Martin	12	0	7	0.3	9	2	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunnyvale	8	0	0	-	6	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bay Area Days over Standard		1	15			7				0			0			0				0	10

*Since PM_{10} is only sampled every sixth day, *actual* days over standard can be estimated to be six times the numbers shown.

NOTES

The annual Bay Area Air Pollution Summary summarizes measurements for the federal and California time-averaged pollutant standards.

The federal eight-hour average ozone standard is in effect, but the U.S. Supreme Court has decreed that EPA must issue implementation guidance through new rulemaking.

The Gilroy station reopened on April 1, 2001. It was closed for the year 2000 due to major construction activity on the property. A new monitoring station in Sunnyvale was opened on April 1, 2001.

Explanation of Terms

State and federal excesses occur when pollutant concentrations surpass the indicated standards, with values in most cases rounded to the same number of decimal places.

MAX HR / MAX 8-HR / MAX 24-HR
The highest average contaminant concentration over a one-hour period, an eight-hour period, or a 24-hour period.

NAT DAYS
The number of days during the year for which the monitoring station recorded contaminant concentration levels in excess of the national standard.

CAL DAYS
The number of days during the year for which the station recorded contaminant levels in excess of the California standard.

3-YR AVG (1-hr ozone standard)
The average number of days per year in excess of the national ozone standard, based on the most recent three-year period. *An average higher than 1.0 means the region will be considered out of attainment by the EPA.*

3-YR AVG (8-hr ozone standard)
The average of the fourth highest 8-hour average ozone concentration for each monitoring station, based on the most recent three-year period. *A concentration greater than 8.5 means that the region will be considered out of attainment by the EPA.*

ANN AVG
The yearly average (arithmetic mean) of the readings taken at a given monitoring station.

ANN GEO MEAN
The annual geometric mean concentration level (used for PM_{10}). The geometric mean of *n* positive numbers is the *n*th root of their product.

PM_{10}
Particulate matter ten microns or smaller in size. (PM_{10} is only sampled every sixth day. *Actual* days over standard can be estimated to be six times the number shown.)

TOTAL BAY AREA DAYS OVER STANDARD is not a sum of excesses at individual stations, but rather of the number of days for which excesses occurred at any one or more stations.

HEALTH-BASED AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Std	National Std
Ozone	1 Hour	9 pphm	12 pphm
	8 Hour	—	8 pphm
Carbon Monoxide	1 Hour	20 ppm	35 ppm
	8 Hour	9.0 ppm	9 ppm
Nitrogen Dioxide	1 Hour	25 pphm	—
	Annual	—	5.3 pphm
Sulfur Dioxide	24 Hour	40 ppb	140 ppb
	Annual	—	30 ppb
Particulates < 10 microns	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual	—	50 $\mu g/m^3$
	Annual Geometric Mean	30 $\mu g/m^3$	—

Concentrations ppm parts per million | pphm parts per hundred million | ppb parts per billion | $\mu g/m^3$ micrograms per cubic meter

TEN-YEAR BAY AREA AIR QUALITY SUMMARY

YEAR	OZONE			CARBON MONOXIDE				Nitrogen Dioxide	Sulfur Dioxide		PM_{10}	
	1-Hr		8-Hr*	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr	
	Nat	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat**	Cal**
1992	2	23	-	0	0	0	0	0	0	0	0	18
1993	3	19	-	0	0	0	0	0	0	0	0	10
1994	2	13	-	0	0	0	0	0	0	0	0	9
1995	11	28	-	0	0	0	0	0	0	0	0	7
1996	8	34	-	0	0	0	0	0	0	0	0	3
1997	0	8	-	0	0	0	0	0	0	0	0	4
1998	8	29	16	0	0	0	0	0	0	0	0	5
1999	3	20	9	0	0	0	0	0	0	0	0	12
2000	3	12	4	0	0	0	0	0	0	0	0	7
2001	1	15	7	0	0	0	0	0	0	0	0	10

*EPA promulgated the 8-Hr standard in mid-1997

**PM_{10} is sampled every sixth day—*actual* days over standard can be estimated to be six times the numbers listed.